

Catalog of the adelgids of the world (Hemiptera, Adelgidae)

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Abstract

A taxonomic and nomenclatural Catalogue of the adelgids (Hemiptera: Adelgidae) is presented. Six family-group names are listed, five being synonyms of Adelgidae. Twenty-two genus-group names, of which nine are subjectively valid and in use, are presented with their type species, etymology, and grammatical gender. One hundred and six species-group names are listed, of which 70 are considered subjectively valid.

Keywords

Aphidomorpha, nomenclature, Sternorrhyncha, taxonomy, woolly adelgid

Introduction

Adelgidae is a small family of Hemiptera with 65 species, closely related to Aphididae. They exhibit a two-year life cycle, with some species alternating hosts between spruce (*Picea*) one year and species of another conifer genus (*Abies*, *Larix*, *Pinus*, *Pseudotsuga*,

Tsuga) the next. Other species or populations do not alternate hosts, feeding only on *Picea* or one of the other conifer genera. Like other Aphidomorpha, Adelgidae exhibit cyclical parthenogenesis, although they are oviparous unlike the viviparous Aphididae. Some adelgid species are important forestry pests, most notably the hemlock woolly adelgid, *Adelges tsugae* (Annand) and the balsam woolly adelgid, *Adelges piceae* (Ratzeburg). Havill and Footitt (2007) present a thorough overview of the biology and evolution of the family.

The closest relatives of the Adelgidae are two extinct families, Elektraphididae and Mesozoicaphididae, the three families comprising the superfamily Adelgoidea (Heie and Wegierek 2009). The oldest fossils of the extinct families date to the Cretaceous, whereas the only fossil adelgid, *Adelges balticus* Wegierek, 2003, is Eocene in age. Heie and Wegierek (2011) present a list of the fossil Aphidomorpha, including the one adelgid and the 20 other Adelgoidea species.

Adelgid classification has long been unstable. It was first hampered by the adoption of the genus name *Chermes* Linnaeus, 1758, which had also been used for psyllids and scale insects (Favret et al. 2014). The name was eventually suppressed by the International Commission on Zoological Nomenclature (Evans and China 1965), but not before 137 nominal species had been described in combination with *Chermes*, including 43 Adelgidae (Favret et al. 2014). Towards the end of the 19th Century and in the first half of the 20th Century, several workers described many new species and erected new genera. Most notably, there was little agreement about adelgid taxonomy between the two most prolific adelgid workers, the Russian N.A. Cholodkovsky and the German C. Börner. With the application of molecular data and explicit systematic analyses (Havill et al. 2007, Havill and Footitt 2007), adelgid classification has become more stable. Many researchers have adopted a system with two genera (*Adelges* Annand and *Pineus* Shimer) and several subgenera, although some have preferred to treat the latter as full genera (Binazzi 1984, Zurovcová et al. 2010).

While several world catalogs and species lists of the more diverse Aphididae have been published (Wilson and Vickery 1918, Patch 1938, Hille Ris Lambers and Eastop 1976, Remaudière and Remaudière 1997), a comprehensive catalog of the Adelgidae has never been produced. Perhaps the small size of the family contributed to its neglect, but the relative inaccessibility of the taxonomic literature, written in multiple languages and in often hard-to-find sources, possibly made the task too daunting. We here present a taxonomic and nomenclatural list of the extant adelgid nominal taxa, including six family-group, 22 genus-group, and 106 species-group names. Of these, we list one valid family (Adelgidae), two and seven valid genera and subgenera (not counting nominotypical subgenera), and 65 and five valid species and subspecies (not counting nominotypical subspecies). We include one genus-group nomen dubium, four suppressed genus-group names, three species-group nomina dubia, and two unavailable species-group names; the many such names still in combination with *Chermes* are not listed here (Favret et al. 2014).

Despite having nomenclatural priority, *Coccus laricis* Bouché, 1834 has long been treated as a synonym of *A. laricis* Vallot, 1836 (Börner 1952, Steffan 1972, Eastop and

Hille Ris Lambers 1976). *Coccus laricis* Bouché has not been used as a valid name after 1899, meeting the requirements of nomen oblitum per ICZN Article 23.9.1.1 (International Commission on Zoological Nomenclature 1999). Meanwhile, *Adelges laricis* Vallot has been used frequently. To address ICZN Article 23.9.1.2 and thus consider *A. laricis* Vallot a nomen protectum, we here list 25 works that used the name as valid, published by at least ten authors in the immediately preceding 50 years and encompassing a span of not less than ten years (Carter 1971, Podeur 1971, Steffan 1972, Li and Tsai 1973, Parry 1973, Eichhorn and Carter 1978, Zhang et al. 1980, Fang 1982, Binazzi 1984, Luo 1988, Rohfritsch 1988, Eichhorn 1994, Battisti et al. 1997, Fang and Yan 1997, Szklarczyk et al. 2000, Wegierek 2002, Rożkowski 2004, Skrzypczyńska 2004, Havill and Footitt 2007, Havill et al. 2007, Zurovcová et al. 2010, Michalik et al. 2012, Sano and Ozaki 2012, Toenshoff et al. 2012, Gavrilov-Zimin et al. 2015).

In order to facilitate future species descriptions, we followed the model of recent aphid genus-group catalogs by including information on etymology and grammatical gender (Favret et al. 2008, 2009, Cortés Gabaudan et al. 2011, Nieto Nafria et al. 2011). In cases where two page numbers are provided for original descriptions, the first number refers to a nomenclaturally valid diagnosis, such as in a dichotomous key, the second references the formal description. Valid names are in bold font, synonyms are preceded by '='. Synonyms of family-group names are presented with their rank-specific endings replaced by '__'. Nominal species are listed under their current generic placement with the original genus in parentheses. The taxonomic catalog is followed by an alphabetical index to help find the current placement of each name. It is our hope that this catalog will serve as an initial point of convergence in our understanding of adelgid systematics and a point of departure on which future research will be built. Future updates will be published on Aphid Species File (Aphid.SpeciesFile.org).

Catalogue

ADELGIDAE Annand 1928:31

- Original spelling. Adelginae
- Type genus. *Adelges* Vallot 1836
- =CHERMES__ Herrich-Schaeffer 1854:VIII
- Original spelling. Chermiden
- Type genus. *Chermes* Linnaeus 1758
- Note. Suppressed (Evans and China 1965)
- =CHERMAPH__ Hunter 1901:70
- Original spelling. Chermaphinae
- Type genus. *Chermaphis* Maskell 1884
- =DREYFUSI__ Börner 1930:155
- Original spelling. Dreyfusiini
- Type genus. *Dreyfusia* Börner 1908a
- =PINE__ Nüsslin in Börner 1909c:51

Original spelling. Pineini
 Type genus. *Pineus* Shimer 1869
 =SACCHIPHANT__ Steffan 1968:128
 Original spelling. Sacchiphantini
 Type genus. *Sacchiphantes* Curtis 1844

ADELGES Vallot 1836

Subgenus **ADELGES** Vallot 1836:72

Type species. *Adelges laricis* Vallot 1836, by original monotypy
 Etymology. Greek adelos ‘unclear’, ‘secret’ + Greek ge ‘earth’ + -s [concealed in the earth]
 Gender. Masculine
 =ANISOPHLEBA Koch 1857:320
 Type species. *Anisophleba hamadryas* Koch 1857, by subsequent monotypy
 Etymology. Greek anisos ‘unequal’ + Greek phleps ‘vein’ + -a
 Gender. Feminine
 =LARICETHUS Amyot 1847:485
 Type species. *Adelges laricis* Hartig 1839, by original monotypy
 Etymology. Greek larix ‘larch’ + Greek eth- ‘custom’, ‘habit’ + -us
 Gender. Masculine
 Note. Suppressed (China 1963)

aenigmaticus Annand 1928:34,73 (*Adelges*)

geniculatus (Ratzeburg 1844:202) (*Chermes*)

isedakii Eichhorn in Eichhorn and Carter 1978:280 (*Adelges*)

japonicus (Monzen 1929:71) (*Chermes*)

karamatsu Inouye 1945:54,86 (variety of *Adelges laricis* Vallot)

lapponicus (Cholodkovsky 1889b:390) (*Chermes*)

=*praecox* (Cholodkovsky 1898:28) (variety of *Chermes lapponicus* Cholodkovsky)

lariciatus (Patch 1909:137) (*Chermes*)

laricis Vallot 1836:72 (*Adelges*) (nomen protectum with respect to *Coccus laricis* Bouché)
 subspecies **laricis** Vallot 1836

=*atratus* (Buckton 1883:39) (*Chermes*)

=*coccineus* (Ratzeburg 1843:202) (*Chermes*)

=*consolidatus* (Patch 1909:137) (*Chermes*)

=*hamadryas* (Koch 1857:320) (*Anisophleba*)

=*lariceti* (Altum 1889:279) (*Chermes*)

=*laricis* (Bouché 1834:22) (*Coccus*) (nomen oblitum with respect to *Adelges laricis* Vallot)

=*laricis* (Hartig 1839:644) (*Chermes*)

=*obtectus* (Ratzeburg 1844:200) (*Chermes*)

=*strobilobius* (Kaltenbach 1843:203) (*Chermes*)

subspecies ***potaninilaricis*** Zhang in Zhang et al. 1980:383 (subspecies of *Adelges laricis* Vallot)

tardoides (Cholodkovsky 1911:175) (variety of *Chermes strobilobius* Kaltenbach)

tardus (Dreyfus 1888:3) (*Chermes*)

=*affinis* (Börner 1908b:167) (*Cnaphalodes*) (Börner 1908a:417 nomen nudum)

=*niger* (Solowiow 1924:41) (*Chermes*)

Subgenus **ANNANDINA** Favret et al. 2015:176

Type species *Adelges tsugae* Annand 1924b, by original designation

Etymology. (Percy Nicol) Annand [American entomologist] + -ina

Gender. Feminine

tsugae Annand 1924b:79 (*Adelges*)

Subgenus **APHRASTASIA** Börner 1909a:1

Type species. *Chermes pectinatae* Cholodkovsky 1888, by original monotypy

Etymology. Greek aphrastós ‘unnoticed’ + -ia

Gender. Feminine

pectinatae (Cholodkovsky 1888:47) (*Chermes*)

subspecies ***ishiharai*** (Inouye 1936:75) (*Chermes*)

subspecies ***pectinatae*** (Cholodkovsky 1888)

Subgenus **CHOLODKOVSKYA** Börner 1909b:1

Type species. *Chermes viridanus* Cholodkovsky 1896, by original monotypy

Etymology. (Nikolai Alexandrovitsch) Cholodkovsky [Russian entomologist] + -a

Gender. Feminine

oregonensis Annand 1928:34,67 (*Adelges*)

viridanus (Cholodkovsky 1896:39) (*Chermes*)

=*laricicola* (Shinji 1930:151) (*Chermes*)

viridulus (Cholodkovsky 1911:175) (*Chermes*)

Subgenus **DREYFUSIA** Börner 1908a:416

Type species. *Chermes piceae* Ratzeburg 1844, by subsequent designation (Börner 1908b:138)

Etymology. (Ludwig Theodor) Dreyfus [German entomologist] + -ia

Gender. Feminine

abietispiceae (Stebbing 1903:57) (*Chermes*) nomen dubium (Choldkovsky (1906:49, 1915:60) indicates that the species is probably real but that the description is insufficient to confirm its identity; Schneider-Orelli and Schneider (1954:414) agree that Stebbing’s description provides insufficient morphological information to

compare with their description of *Dreyfusia knucheli* Schneider-Orelli and Schneider. Ghosh (1983:11) considered it a synonym of *Dreyfusia knucheli*, but qualified it with a question mark)

=*himalayensis* (Stebbing 1910:100) (*Chermes*) (unavailable, described in synonymy with *Chermes abietispiceae* Stebbing 1903)

funitectus (Dreyfus 1888:6) (*Chermes*) nomen dubium (Favret et al. 2015)

joshii (Schneider-Orelli and Schneider 1959:260) (*Dreyfusia*)

knucheli (Schneider-Orelli and Schneider 1954:416) (*Dreyfusia*)

merkeri (Eichhorn 1957:312) (*Dreyfusia*)

nebrodensis (Binazzi and Covassi 1991:246) (*Dreyfusia*)

nordmannianae (Eckstein 1890:90) (*Chermes*)

=*nuesslini* (Börner 1908c:739) (*Dreyfusia*)

piceae (Ratzeburg 1844:204) (*Chermes*)

subspecies *canadensis* (Merker and Eichhorn 1956:454) (form of *Dreyfusia piceae* (Ratzeburg))

subspecies *occidentalis* Foottit and Mackauer 1983:302 (subspecies of *Adelges piceae* (Ratzeburg))

subspecies *piceae* (Ratzeburg 1844)

=*bouvieri* (Cholodkovsky 1902:10) (variety of *Chermes piceae* Ratzeburg)

pindrowi Yaseen and Ghani 1971:191,193 (*Adelges*)

prelli (Grosman 1935:822) (*Dreyfusia*)

schneideri (Börner 1931:684) (*Dreyfusia*)

todomatsui (Inouye 1945:73,92) (*Dreyfusia*)

Subgenus **GILLETTEELLA** Börner 1930:157

Type species. *Chermes cooleyi* Gillette 1907, inherited from replaced name

Etymology. (Clarence Preston) Gillette [American entomologist] + -ella [diminutive suffix]

Gender. Feminine

Note. Replacement name for *Gillettea* Börner 1909d

=*GILLETTEA* Börner 1909d:504

Type species. *Chermes cooleyi* Gillette 1907, by original monotypy

Etymology. (Clarence Preston) Gillette [American entomologist] + -a

Gender. Feminine

Note. Junior homonym of *Gillettea* Ashmead 1897:69 (Hymenoptera, Cynipidae)

cooleyi (Gillette 1907:3) (*Chermes*)

coweni (Gillette 1907:10) (variety of *Chermes cooleyi* Gillette)

cummingae (Steffan 1968:10,22,42) (*Gilletteella*) nomen nudum

glandulae (Zhang in Zhang et al. 1980:382) (*Gilletteella*)

Subgenus **SACCHIPHANTES** Curtis 1844:831Type species. *Chermes abietis* Linnaeus 1758, by original monotypy

Etymology. Greek sakkos ‘coarse cloth’, ‘sail’ + Greek hyphantēs ‘weaver’

Gender. Masculine

= **ELATIPTUS** Amyot 1847:484Type species. *Chermes abietis* Linnaeus 1758, by original monotypy

Etymology. Greek elatē ‘fir’ + Greek ipt- ‘harm’ + -us

Gender. Masculine

Note. Suppressed (China 1963) and junior objective synonym of *Sacchiphantes* Curtis 1844= **PHLOEOPHTHIRIDIUM** van der Hoeven 1849:509Type species. *Chermes abietis* Linnaeus 1758, by original monotypy

Etymology. Greek phloios ‘bark’ + Greek phtheir- ‘destroy’ + Greek -idium [diminutive suffix]

Gender. Neuter

Note. Junior objective synonym of *Sacchiphantes* Curtis 1844***abietis*** (Linnaeus 1758:454) (*Chermes*)= *abietislaricis* (Eckstein 1890:88) (*Chermes*) based on Dreyfus’s (1889:82) description of a *Larix*-associated form of *Chermes abietis*= *alaeviridis* (Solowiow 1924:39) (*Chermes*)= *gallarumabietis* (De Geer 1773:99) (*Aphis*) nomen dubium= *laricifoliae* (Fitch 1858:752) (*Chermes*)***diversis*** Annand 1928:34,69 (*Adelges*)***karafutonis*** Kono and Inouye 1938:169,170 (*Adelges*)***kitamiensis*** (Inouye 1963:341) (*Sacchiphantes*)***roseigallis*** (Li and Tsai 1973:135,141,148) (*Sacchiphantes*)***segregis*** (Steffan 1961:67) (*Sacchiphantes*)***torii*** (Eichhorn in Eichhorn and Carter 1978:284) (*Sacchiphantes*)***viridis*** (Ratzeburg 1843:202) (*Chermes*)= *occidentalis* (Cholodkovsky 1910:281) (*Chermes*)**CHERMES** Linnaeus 1758:453

Type species. None (see Favret et al. 2014)

Etymology. Arabic kirmiz ‘crimson’

Gender. Masculine

Note. Suppressed (Evans and China 1965), see Favret et al. (2014) for list of species-group names described under *Chermes***GISTELIELLA** Strand 1928:46Type species. *Chermes lapidarius* Fabricius 1803, inherited from replaced name

Etymology. (Johannes) Gistel [German entomologist] + -i + ella [diminutive suffix]

Gender. Feminine

Note. Replacement name for *Aphanus* Gistel 1837, nomen dubium
=APHANUS Gistel 1837:111

Type species. *Chermes lapidarius* Fabricius 1803, by original monotypy

Etymology. Greek aphanēs ‘invisible’

Gender. Masculine

Note. Junior homonym of *Aphanus* Laporte 1833:35 (Hemiptera, Lygaeidae)
lapidaria (Fabricius 1803:306) (*Chermes*) nomen dubium (placement unknown)

PINEUS Shimer 1869:383

Subgenus **PINEODES** Börner 1926:240

Type species. *Chermes pinifoliae* Fitch 1858, by original monotypy

Etymology. *Pine(us)* [Hemiptera: Adelgidae] + Greek -ōdēs ‘resembling’

Gender. Masculine

pinifoliae (Fitch 1858:741) (*Chermes*)

=*abieticolens* (Thomas 1879:156) (*Chermes*)

=*armiger* (Annand 1924a:5) (*Chermes*)

=*montanus* (Gillette 1907:14) (*Chermes*)

Subgenus **PINEUS** Shimer 1869:383

Type species. *Coccus pinicorticis* Fitch 1855, by original monotypy

Etymology. Latin pineus ‘of or pertaining to pine’

Gender. Masculine

=**CHERMAPHIS** Maskell 1884:292

Type species. *Kermaphis pini* var. *laevis* Maskell 1885, by subsequent designation (Eastop and Hille Ris Lambers 1976:144)

Etymology. *Cherm(es)* [Hemiptera] + *Aphis* [Hemiptera: Aphididae]

Gender. Feminine

=**CNAPHALODES** Amyot and Audinet Serville 1843:595

Type species. *Chermes pini* Goeze 1778, by original monotypy

Etymology. Greek knaphallon ‘pillow’ + Greek -ōdēs ‘resembling’

Gender. Masculine

=**EOPINEUS** Steffan 1968:11

Type species. *Chermes strobi* Ratzeburg 1844, by subsequent designation (Eastop and Hille Ris Lambers 1976:188)

Etymology. Greek ēōs ‘dawn’, ‘early’ + *Pineus* [Hemiptera: Adelgidae]

Gender. Masculine

=**KERMAPHIS** Maskell 1885:19

Type species. *Anisophleba pini* Koch 1857, by subsequent designation (Eastop and Hille Ris Lambers 1976:232)

Etymology. *Kerm(es)* [Hemiptera: Coccoidea] + *Aphis* [Hemiptera: Aphididae]

Gender. Feminine

=*PITYOPSYLLA* Amyot 1847:461

Type species. *Chermes pini* Goeze 1778, by original monotypy

Etymology. Greek pitys ‘pine’ + *Psylla* [Hemiptera: Psyllidae]

Gender. Feminine

Note. Suppressed (China 1963) and junior objective synonym of *Cnaphalodes*

Amyot and Audinet Serville 1843

abietinus Underwood and Balch 1964:523 (*Pineus*)

armandicola Zhang et al. 1992:360,394 (*Pineus*)

boernerii Annand 1928:34,112 (*Pineus*) (Takahashi (1937:11), Inouye (1945:36), and Ghosh (1983:8) list this species as a synonym of *Pineus laevis* (Maskell), but Maskell’s (1885:16) description is insufficient to validate synonymy)

boycei Annand 1928:35,102 (*Pineus*)

cembrae (Cholodkovsky 1888:47) (*Chermes*)

subspecies ***cembrae*** (Cholodkovsky 1888)

=*sibiricus* (Cholodkovsky 1889b:388) (*Chermes*)

subspecies ***pinikoreanus*** Zhang and Fang 1981:15 (subspecies of *Pineus cembrae* (Cholodkovsky))

cladogenous Fang and Sun 1985:3 (*Pineus*)

coloradensis (Gillette 1907:16) (*Chermes*)

corteciculus Fang and Sun 1985:2 (*Pineus*)

engelmannii Annand 1928:36,130 (*Pineus*)

floccus (Patch 1909:137) (*Chermes*)

ghanii Yaseen and Ghani 1971:191,199 (*Pineus*)

harukawai Inouye 1945:13,21,31,80 (*Pineus*)

havrylenkoi Blanchard 1944:52 (*Pineus*)

hosoyai Inouye 1945:22,32,81 (*Pineus*)

konowashiyai Inouye 1945:13,21,34,81 (*Pineus*)

laevis (Maskell 1885:16) (variety of *Kermaphis pini* (Koch))

matsumurai Inouye 1945:13,22,37,82 (*Pineus*)

orientalis (Dreyfus 1888:3,6) (*Chermes*)

patchae Börner 1926:239 (*Pineus*)

pineoides (Cholodkovsky 1903:263) (variety of *Chermes pini* (Koch))

pini (Goeze 1778:328) (*Chermes*)

=*coniferarum* (Cholodkovsky 1889a:222) (*Chermes*)

=*pini* (Koch 1857:322) (*Anisophleba*)

=*pinicola* (Cholodkovsky 1915:57) (variety of *Chermes pini* (Koch))

piniyunnanensis Zhang et al. 1992:361,394 (*Pineus*)

sichunanus Zhang in Zhang et al. 1980:381 (*Pineus*)

similis (Gillette 1907:15) (*Chermes*)

simmondsi Yaseen and Ghani 1971:191,195 (*Pineus*)

strobi (Hartig 1839:643) (*Coccus*)

=*corticalis* (Kaltenbach 1843:197) (*Chermes*)

=*pinicorticis* (Fitch 1855:871) (*Coccus*)

=*strobi* (Baerensprung 1849:174) (*Coccus*)

=*strobi* (Ratzeburg 1844:203) (*Chermes*)

sylvestris Annand 1928:34,115 (*Pineus*)

wallichianae Yaseen and Ghani 1971:191,202 (*Pineus*)

Index of genus-group and species-group names

ADELGES Vallot 1836

abieticolens Thomas 1879 – synonym of *Pineus* (*Pineodes*) *pinifoliae*

abietinus Underwood and Balch 1964 – *Pineus* (*Pineus*)

abietis Linnaeus 1758 – *Adelges* (*Sacchiphantes*)

abietislaricis Eckstein 1890 – synonym of *Adelges* (*Sacchiphantes*) *abietis*

abietispiceae Stebbing 1903 – *Adelges* (*Dreyfusia*)

aenigmaticus Annand 1928 – *Adelges* (*Adelges*)

affinis Börner 1908b – synonym of *Adelges* (*Adelges*) *tardus*

alaeviridis Solowjow 1924 – synonym of *Adelges* (*Sacchiphantes*) *abietis*

ANISOPHLEBA Koch 1857 – synonym of *Adelges* (*Adelges*)

ANNANDINA Favret et al. 2015 – subgenus of *Adelges*

APHANUS Gistel 1837 – synonym of *Gisteliella*

APHRASTASIA Börner 1909a – subgenus of *Adelges*

armandicola Zhang et al. in Chen 1992 – *Pineus* (*Pineus*)

armiger Annand 1924a – synonym of *Pineus* (*Pineodes*) *pinifoliae*

atratus Buckton 1883 – synonym of *Adelges* (*Adelges*) *laricis larici*

boernerii Annand 1928 – *Pineus* (*Pineus*)

bouvieri Cholodkovsky 1902 – synonym of *Adelges* (*Dreyfusia*) *piceae piceae*

boycei Annand 1928 – *Pineus* (*Pineus*)

canadensis Merker and Eichhorn 1956 – subspecies of *Adelges* (*Dreyfusia*) *piceae*

cembrae Cholodkovsky 1888 – *Pineus* (*Pineus*)

CHERMAPHIS Maskell 1884 – synonym of *Pineus* (*Pineus*)

CHERMES Linnaeus 1758

CHOLODKOVSKYA Börner 1909b – subgenus of *Adelges*

cladogenous Fang and Sun 1985 – *Pineus* (*Pineus*)

CNAPHALODES Amyot and Audinet Serville 1843 – synonym of *Pineus* (*Pineus*)

coccineus Ratzeburg 1843 – synonym of *Adelges* (*Adelges*) *laricis laricis*

coloradensis Gillette 1907 – *Pineus* (*Pineus*)

coniferarum Cholodkovsky 1889a – synonym of *Pineus* (*Pineus*) *pini*

consolidatus Patch 1909 – synonym of *Adelges* (*Adelges*) *laricis laricis*

cooleyi Gillette 1907 – *Adelges* (*Gilletteella*)

corteciculus Fang and Sun 1985 – *Pineus* (*Pineus*)

corticalis Kaltenbach 1843 – synonym of *Pineus* (*Pineus*) *strobi*

coweni Gillette 1907 – *Adelges* (*Gilletteella*)

cummingae Steffan 1968 – *Adelges* (*Gilletteella*)

- diversis* Annand 1928 – *Adelges* (*Sacchiphantes*)
DREYFUSIA Börner 1908a – subgenus of *Adelges*
ELATIPTUS Amyot 1847 – synonym of *Adelges* (*Sacchiphantes*)
engelmannii Annand 1928 – *Pineus* (*Pineus*)
EOPINEUS Steffan 1968 – synonym of *Pineus* (*Pineus*)
floccus Patch 1909 – *Pineus* (*Pineus*)
funitectus Dreyfus 1888 – *Adelges* (*Dreyfusia*)
gallarumabietis De Geer 1773 – synonym of *Adelges* (*Sacchiphantes*) *abietis*
geniculatus Ratzeburg 1844 – *Adelges* (*Adelges*)
ghanii Yaseen and Ghani 1971 – *Pineus* (*Pineus*)
GILLETTEA Börner 1909d – synonym of *Adelges* (*Gilletteella*)
GILLETTEELLA Börner 1930 – subgenus of *Adelges*
GISTELIELLA Strand 1928
glandulae Zhang in Zhang et al. 1980 – *Adelges* (*Gilletteella*)
hamadryas Koch 1857 – synonym of *Adelges* (*Adelges*) *laricis laricis*
harukawai Inouye 1945 – *Pineus* (*Pineus*)
havrylenkoi Blanchard 1944 – *Pineus* (*Pineus*)
himalayensis Stebbing 1910 – synonym of *Adelges* (*Dreyfusia*) *abietispiceae*
hosoyai Inouye 1945 – *Pineus* (*Pineus*)
isedakii Eichhorn in Eichhorn and Carter 1978 – *Adelges* (*Adelges*)
ishiharai Inouye 1936 – subspecies of *Adelges* (*Aphrastasia*) *pectinatae*
japonicus Monzen 1929 – *Adelges* (*Adelges*)
joshii Schneider-Orelli and Schneider 1959 – *Adelges* (*Dreyfusia*)
karafutonis Kono and Inouye 1938 – *Adelges* (*Sacchiphantes*)
karamatsu Inouye 1945 – *Adelges* (*Adelges*)
KERMAPHIS Maskell 1885 – synonym of *Pineus* (*Pineus*)
kitamiensis Inouye 1963 – *Adelges* (*Sacchiphantes*)
knucheli Schneider-Orelli and Schneider 1954 – *Adelges* (*Dreyfusia*)
konowashiyai Inouye 1945 – *Pineus* (*Pineus*)
laevis Maskell 1885 – *Pineus* (*Pineus*)
lapidaria Fabricius 1803 – *Gisteliella*
laponicus Cholodkovsky 1889b – *Adelges* (*Adelges*)
LARICETHUS Amyot 1847 – synonym of *Adelges* (*Adelges*)
lariceti Altum 1889 – synonym of *Adelges* (*Adelges*) *laricis laricis*
lariciatus Patch 1909 – *Adelges* (*Adelges*)
laricicola Shinji 1930 – synonym of *Adelges* (*Cholodkovskya*) *viridanus*
laricifoliae Fitch 1858 – synonym of *Adelges* (*Sacchiphantes*) *abietis*
laricis Bouché 1834 – synonym of *Adelges* (*Adelges*) *laricis laricis*
laricis Hartig 1839 – synonym of *Adelges* (*Adelges*) *laricis laricis*
laricis Vallot 1836 – *Adelges* (*Adelges*)
matsumurai Inouye 1945 – *Pineus* (*Pineus*)
merkeri Eichhorn 1957 – *Adelges* (*Dreyfusia*)
montanus Gillette 1907 – synonym of *Pineus* (*Pineodes*) *pinifoliae*

- nebrodensis** Binazzi and Covassi 1991 – *Adelges* (*Dreyfusia*)
niger Solowiow 1924 – synonym of *Adelges* (*Adelges*) *tardus*
nordmannianae Eckstein 1890 – *Adelges* (*Dreyfusia*)
nuesslini Börner 1908c – synonym of *Adelges* (*Dreyfusia*) *nordmannianae*
obtectus Ratzeburg 1844 – synonym of *Adelges* (*Adelges*) *laricis laricis*
occidentalis Cholodkovsky 1910 – synonym of *Adelges* (*Sacchiphantes*) *viridis*
occidentalis Footitt and Mackauer 1983 – subspecies of *Adelges* (*Dreyfusia*) *piceae*
oregonensis Annand 1928 – *Adelges* (*Cholodkovskya*)
orientalis Dreyfus 1888 – *Pineus* (*Pineus*)
patchae Börner 1926 – *Pineus* (*Pineus*)
pectinatae Cholodkovsky 1888 – *Adelges* (*Aphrastasia*)
PHLOEOPHTHIRIDIUM van der Hoeven 1849 – synonym of *Adelges* (*Sacchiphantes*)
piceae Ratzeburg 1844 – *Adelges* (*Dreyfusia*)
pindrowi Yaseen and Ghani 1971 – *Adelges* (*Dreyfusia*)
PINEODES Börner 1926 – subgenus of *Pineus*
pineoides Cholodkovsky 1903 – *Pineus* (*Pineus*)
PINEUS Shimer 1869
pini Goeze 1778 – *Pineus* (*Pineus*)
pini Koch 1857 – synonym of *Pineus* (*Pineus*) *pini*
pinicola Cholodkovsky 1915 – synonym of *Pineus* (*Pineus*) *pini*
pinicorticis Fitch 1855 – synonym of *Pineus* (*Pineus*) *strobi*
pinifoliae Fitch 1858 – *Pineus* (*Pineodes*)
pinikoreanus Zhang and Fang 1981 – subspecies of *Pineus* (*Pineus*) *cembrae*
piniyunnanensis Zhang et al. 1992 – *Pineus* (*Pineus*)
PITYOPSYLLA Amyot 1847 – synonym of *Pineus* (*Pineus*)
potaninilaricis Zhang in Zhang et al. 1980 – subspecies of *Adelges* (*Adelges*) *laricis*
praecox Cholodkovsky 1898 – synonym of *Adelges* (*Adelges*) *lapponicus*
prelli Grosmann 1935 – *Adelges* (*Dreyfusia*)
roseigallis Li and Tsai 1973 – *Adelges* (*Sacchiphantes*)
SACCHIPHANTES Curtis 1844 – subgenus of *Adelges*
schneideri Börner 1931 – *Adelges* (*Dreyfusia*)
segregis Steffan 1961 – *Adelges* (*Sacchiphantes*)
sibiricus Cholodkovsky 1889b – synonym of *Pineus* (*Pineus*) *cembrae cembrae*
sichuananus Zhang in Zhang et al. 1980 – *Pineus* (*Pineus*)
similis Gillette 1907 – *Pineus* (*Pineus*)
simmondsi Yaseen and Ghani 1971 – *Pineus* (*Pineus*)
strobi Baerensprung 1849 – synonym of *Pineus* (*Pineus*) *strobi*
strobi Hartig 1839 – *Pineus* (*Pineus*)
strobi Ratzeburg 1844 – synonym of *Pineus* (*Pineus*) *strobi*
strobilobius Kaltenbach 1843 – synonym of *Adelges* (*Adelges*) *laricis laricis*
sylvestris Annand 1928 – *Pineus* (*Pineus*)
tardoides Cholodkovsky 1911 – *Adelges* (*Adelges*)
tardus Dreyfus 1888 – *Adelges* (*Adelges*)

todomatsui Inouye 1945 – *Adelges* (*Dreyfusia*)
torii Eichhorn in Eichhorn and Carter 1978 – *Adelges* (*Sacchiphantes*)
tsugae Annand 1924b – *Adelges* (*Annandina*)
viridanus Cholodkovsky 1896 – *Adelges* (*Cholodkovskya*)
viridis Ratzeburg 1843 – *Adelges* (*Sacchiphantes*)
viridulus Cholodkovsky 1911 – *Adelges* (*Cholodkovskya*)
wallichianae Yaseen and Ghani 1971 – *Pineus* (*Pineus*)

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